

U.S. Department of Energy Natural Gas Vehicle Technology Forum (NGVTF)

Downey, CA November 2008

Dennis Smith, DOE

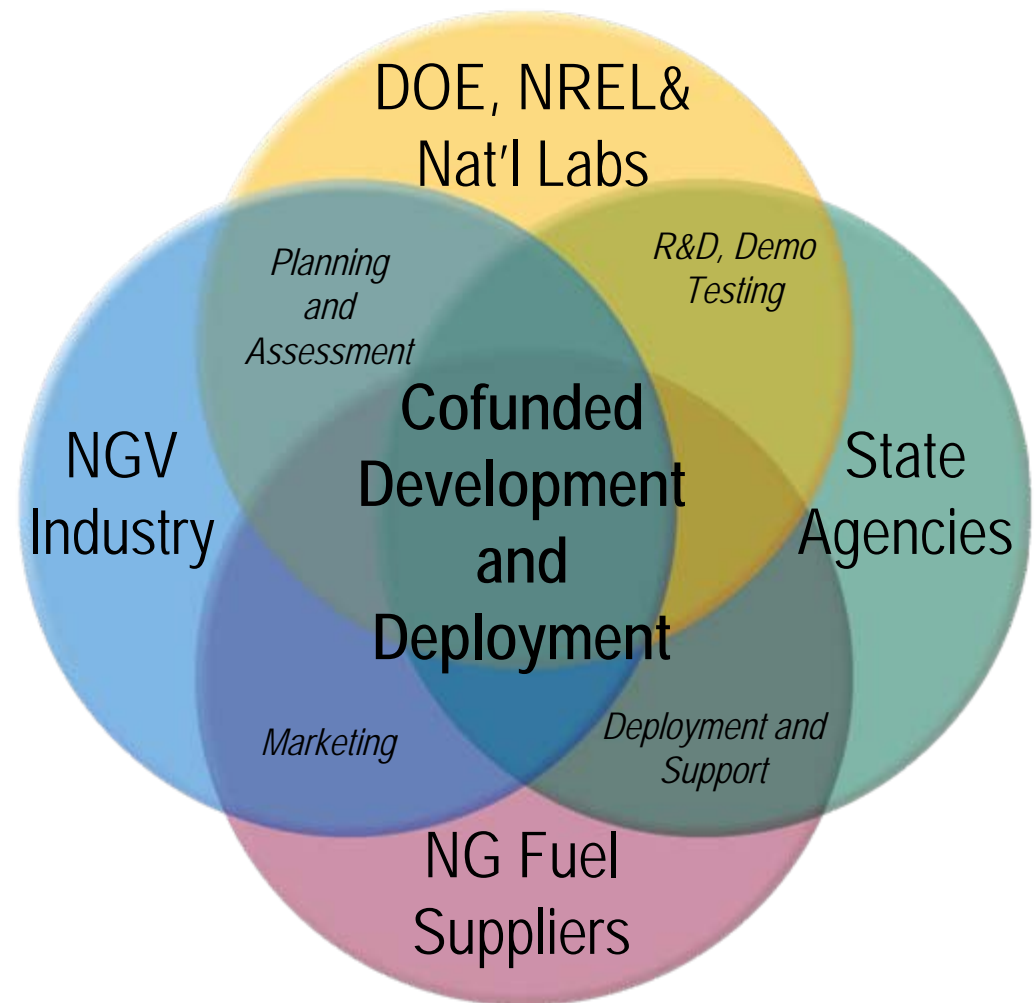
Margo Melendez, Jarett Zuboy NREL

Douglas Horne, CVEF

The Funding Challenge

NGV Technology Forum

- Resources are limited
- One organization cannot fund all phases of research, development and deployment of new technology and vehicles
- All parties want to leverage resources
- Participants must find overlaps in objectives to cofund elements which meet common goals



NGV technology development efforts are intended to support two major task areas and DOE goals:

- A. Petroleum Displacement/Reduction and*
- B. Transition to the Hydrogen Economy*



Work is concentrated in three key focus areas:

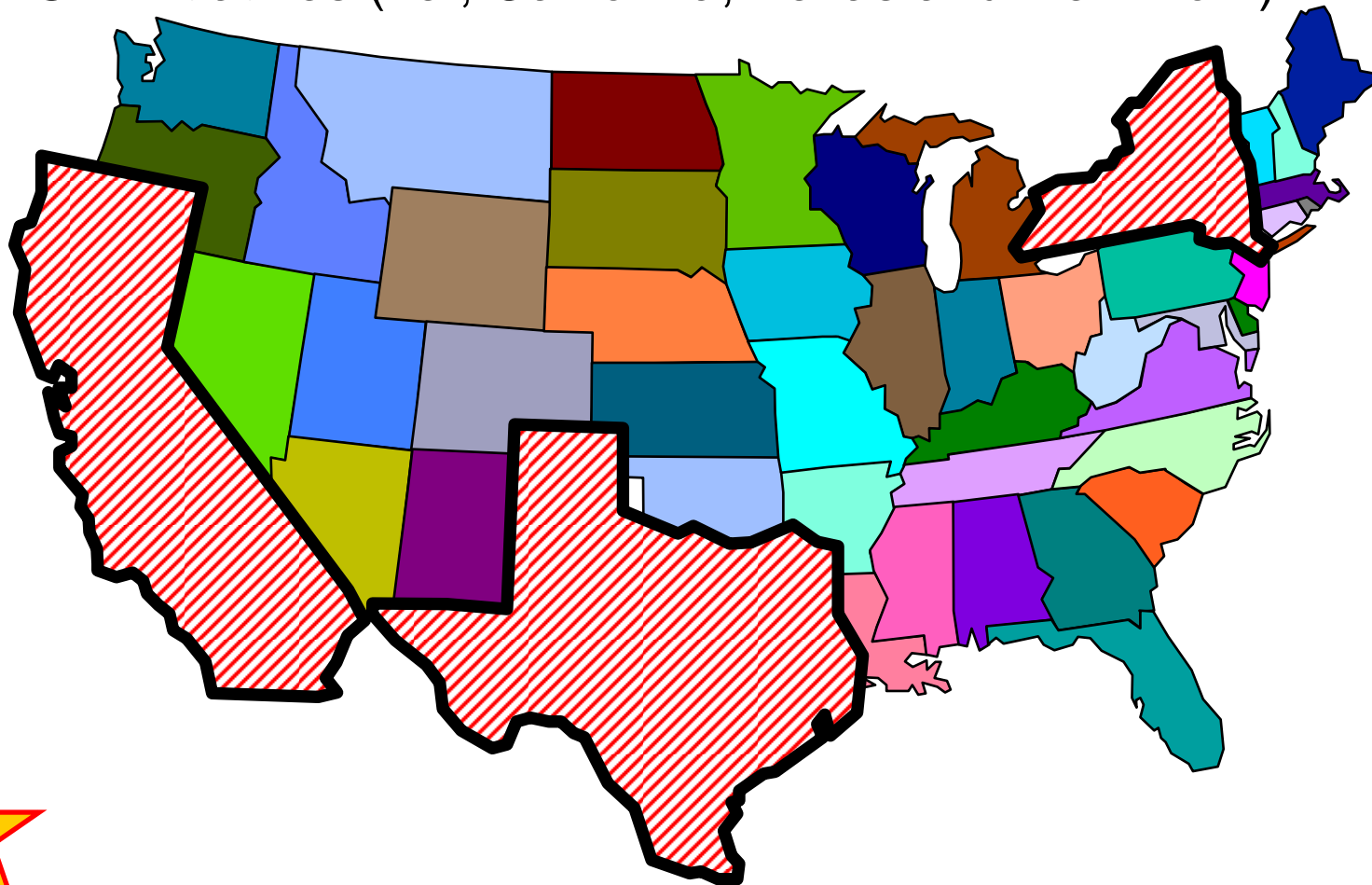
- **Engine & Vehicle Platform Development** activities with OEMs to improve NGV performance and further reduce emissions in near term practical vehicle configurations (medium & heavy duty).
- **Infrastructure Enhancement** activities to reduce costs, improve availability & reliability of refueling, and investigate renewable resources (LNG from land-fill gas and NG-H₂ blends). Also evaluate home refueling options.
- **Technology Transfer** activities that facilitate industry coordination and provide technical assistance to early adopters of gaseous fuel vehicle technologies (Gov't/Industry Technology Forums, Vehicle & Infrastructure User Groups, Safety considerations, and Codes & Standards development)



NGV Technology Forum Purpose

NGV Technology Forum

- A National Forum with Emphasis on regions with active NGV Initiatives (i.e.; California, Texas and New York)





Budget Status FY-2003



NGV Technology Forum

	<u>U.S. House mark</u>	<u>Activity</u>	<u>U.S. Senate mark</u>
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*Natural
Gas*

2,000

Medium Duty
trucks

3,000

2,000

Heavy Duty
trucks

3,000

2,000

Infrastructure

2,000

*All
Alt-fuels*

12,000



11,000

(dollars x 1000)

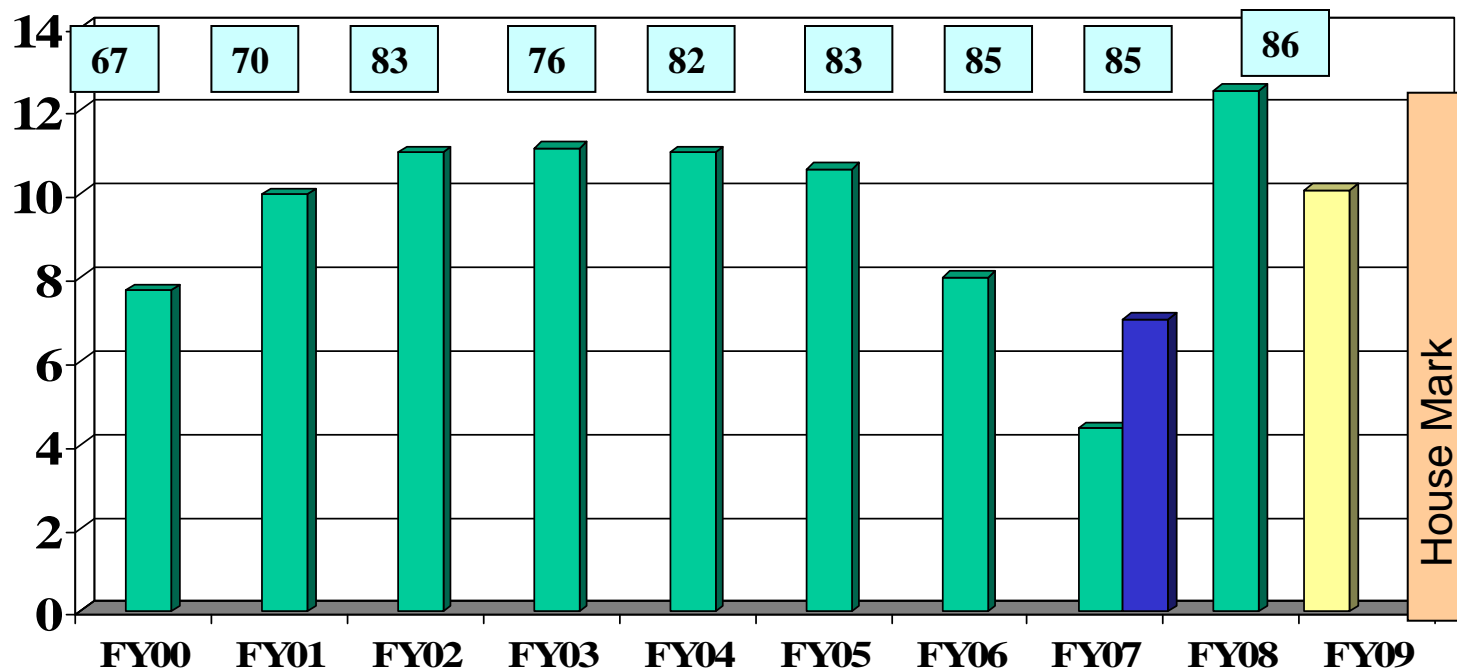




Clean Cities Budget

The number of Coalitions has grown regardless of the budget.

\$ Millions



Request

Appropriation

Adjusted

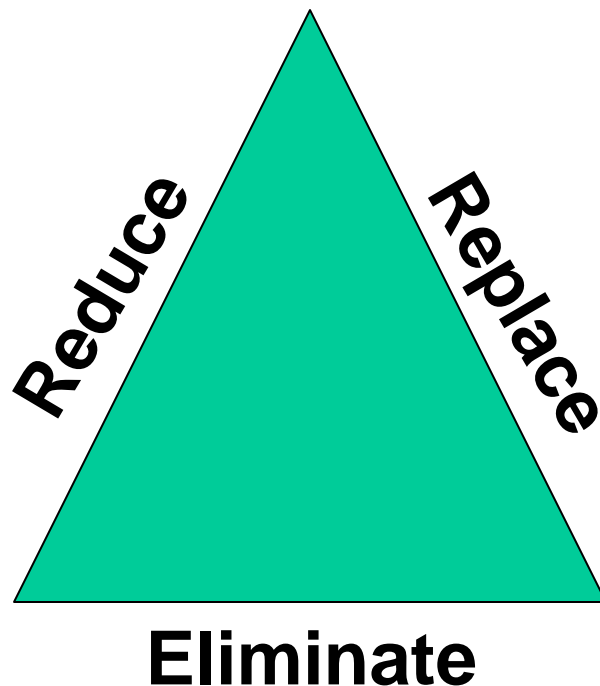


U.S. Department of Energy
Energy Efficiency
and Renewable Energy

Clean
Cities

Goal: Petroleum Reduction

How to Achieve the Goal ...





U.S. Department of Energy
Energy Efficiency
and Renewable Energy

The Clean Cities logo, featuring a stylized "C" made of blue and yellow squares, followed by the words "Clean Cities" in a sans-serif font.

Clean
Cities

So . . . How are We Doing ?

The Clean Cities logo, featuring a stylized "C" made of blue and yellow squares, followed by the words "Clean Cities" in a sans-serif font.

Clean
Cities



Clean Cities Technology Portfolio

Alternative Fuels

- Electricity
- Ethanol
- Propane
- Natural Gas
- BioMethane
- Hydrogen
- Biodiesel (B100)

Idle Reduction

- Heavy-duty trucks
- Transit/School Buses

Blended Fuels

Low levels of alternative fuels with conventional fuels (HCNG, B2, B5 and B20)

Hybrids

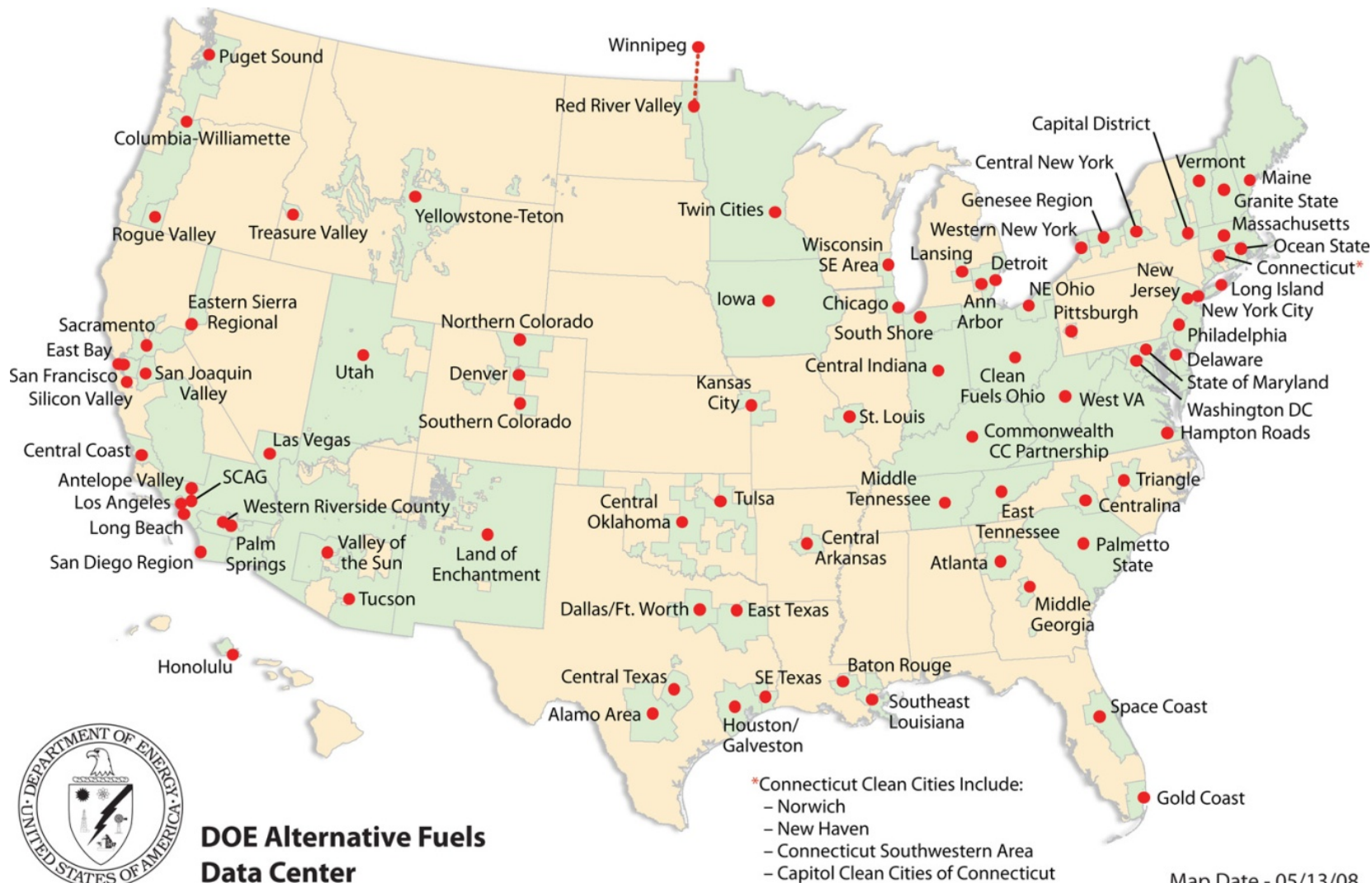
Light- and heavy-duty hybrids

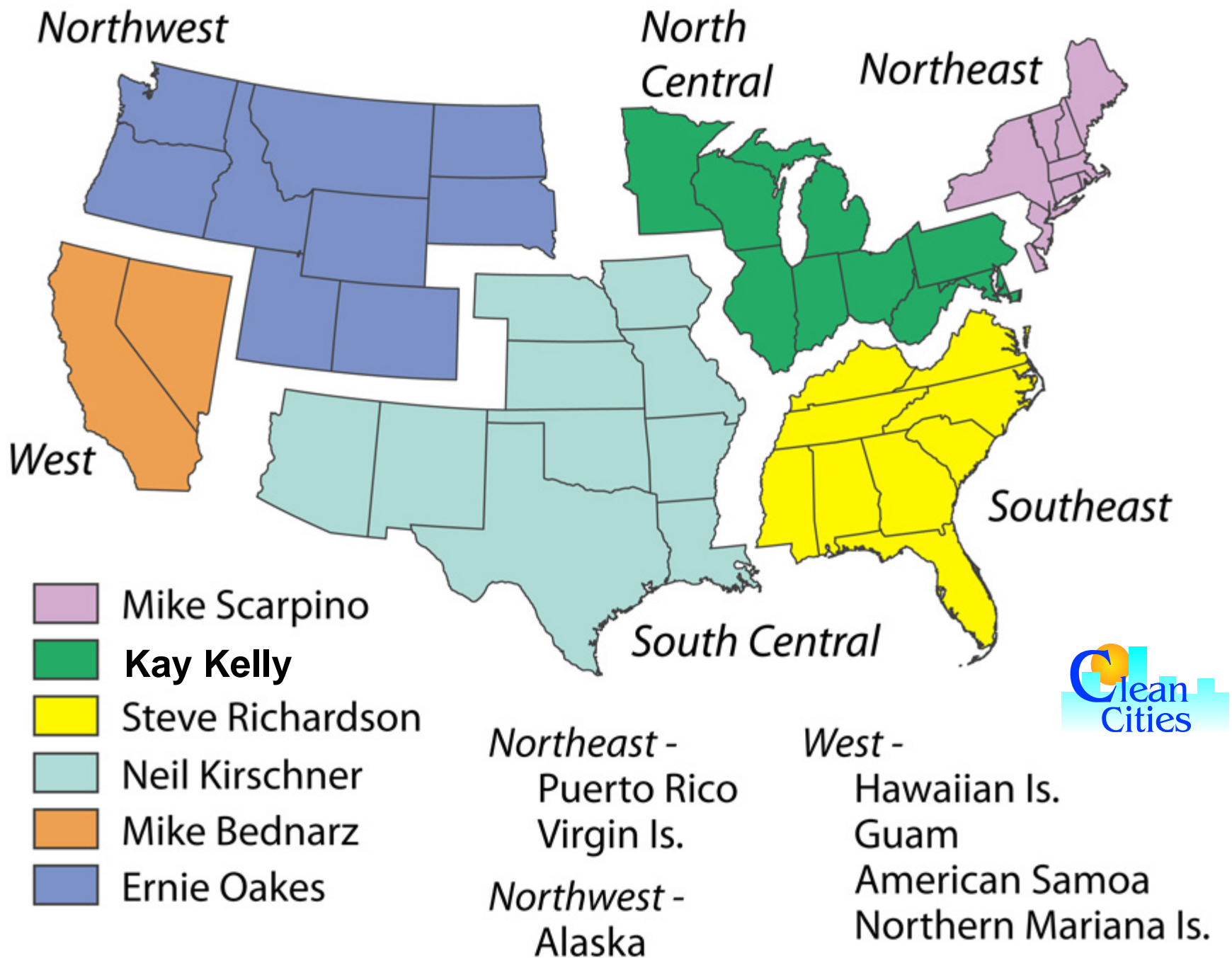
Fuel Economy

More Fuel-efficient vehicles, light weight materials, behavioral changes, vehicle maintenance initiatives, etc.



Clean Cities Today: 86+ Active Coalitions in 45 States







National Laboratory Support

National Energy Technology Lab (NETL – Project Management and Regional coordination of key Clean Cities activities)

National Renewable Energy Lab (NREL – Colorado) – Clean Cities Core program technical support , AFDC, technical communications, publications, Clean Cities Web sites, Hotline Response Service

Oak Ridge National Lab (ORNL - Tennessee) – Federal Fuel Economy Guide, FuelEconomy.Gov websites, National Fuel Economy consumer education and outreach efforts

Brookhaven National Lab (BNL – New York) - BioMethane and Land fill gas recovery

Argonne National Lab (ANL – Illinois) - Emissions Modeling (GREET and AIRCRED) and Idle Reduction analysis



2007 Portfolio Performance

Technology	Million GGEs	Percent of Total
AFV	247	66% ↓
Fuel Economy	86	23% ↑
Blends	20	5% ↑
Hybrids (HEVs)	17	5% ↑
Idle Reduction	6	1% ↓
Total	375 ↑	100%

- AFVs continue to account for lion's share of the displacement
- Fuel Economy is next, with 21.6% from ORNL efforts and other 1.4% from coalitions' efforts

*In 2004, Clean Cities Celebrated Beyond A Billion.
In 2008, Clean Cities surpassed two billion GGE displaced*

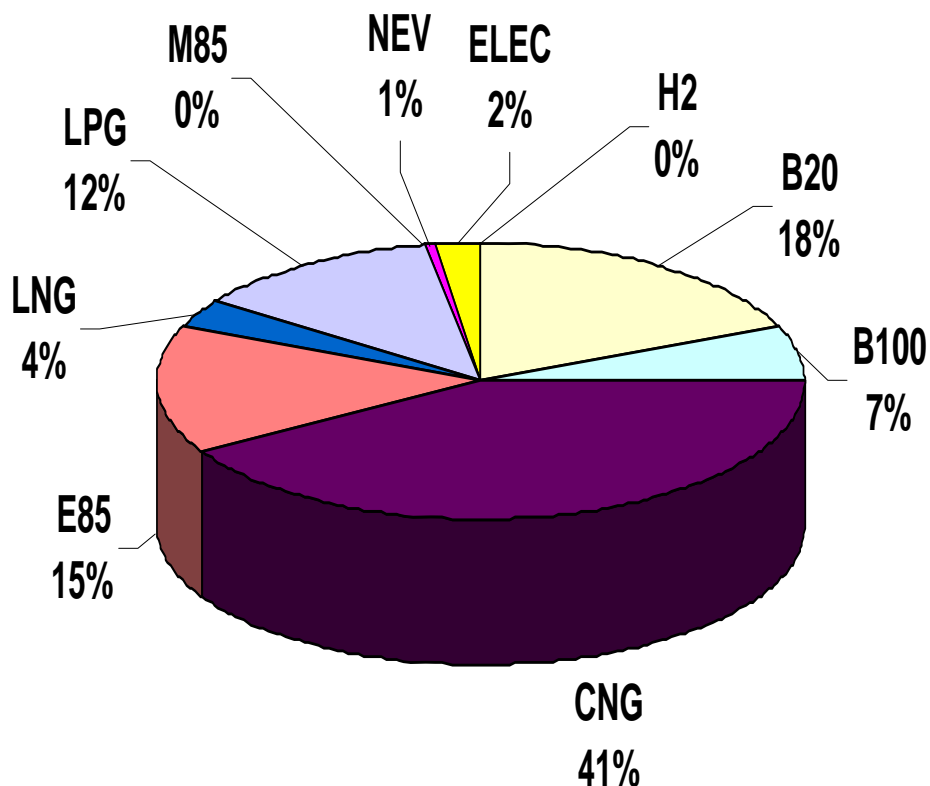


Clean Cities and Alternative Fuels

*AFVs displaced 247
million GGEs in 2007*

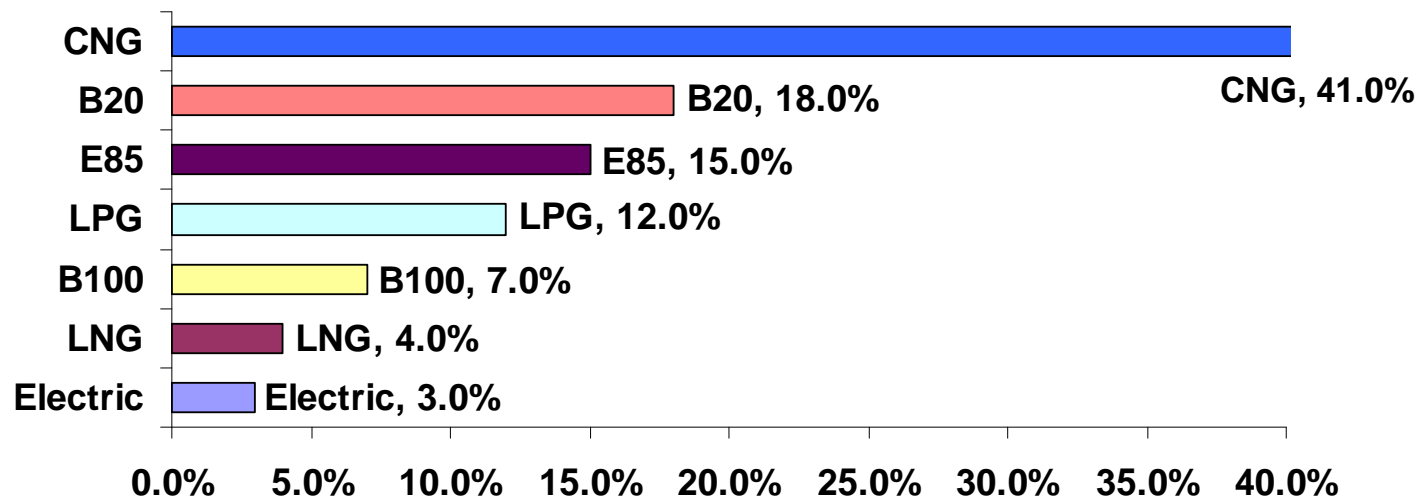
- 2/3 of total CC displacement
- Slight Reduction from last year, due to improved reporting accuracy

Displacement by AFVs

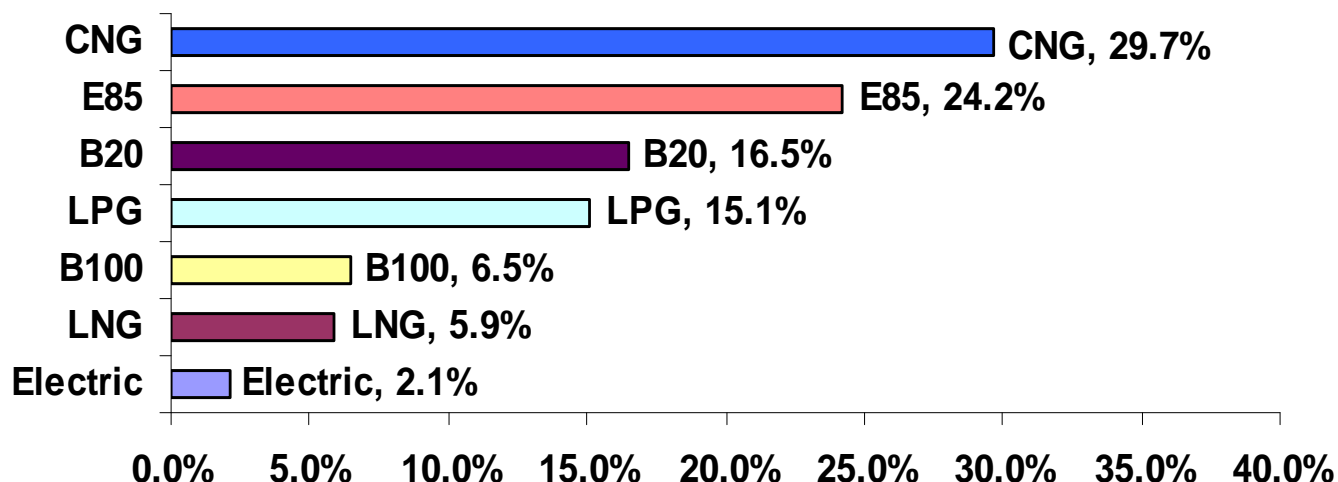


AFV Petroleum Displacement Trends

2007



2006



New Tools

Energy Impact Score

- Carbon Footprint
- (created to help emphasize the benefits of alternative fuels)


www.fueleconomy.gov

Find and Compare Cars | Gas Mileage Tips | Gasoline Prices | Your MPG Will Vary | Why is Fuel Economy Important? | Your MPG | Hybrids, Diesels, Alt Fuels, Etc. | Tax Incentives | Extreme MPG

U.S. Department of Energy | Print the Fuel Economy Guide | U.S. Environmental Protection Agency

2007 Toyota Prius

Hybrid Vehicle
Possible Tax Incentives
Use Your Gas Prices & Annual Miles
Switch to Metric units



Compare side-by-side

Estimated New EPA MPG

REGULAR GASOLINE

46 Combined
48 City 45 Hwy

Official EPA Window Sticker MPG

REGULAR GASOLINE

55 Combined
60 City 51 Hwy

MPG Estimates from Drivers Like You
Average based on 103 vehicles.

46.6
Lo 32 Hi 77
View Individual Estimates

Fuel Economics

Cost to Drive 25 Miles	\$1.67
Fuel to Drive 25 Miles	0.54 gal
Cost of a Fill-up	\$32.88
Miles on a Tank	493 miles
Tank Size	11.9 gal
Annual Fuel Cost*	\$999

Based on 45% highway, 55% city driving, 15000 annual miles and a fuel price of \$ 3.07 per gallon . Use Your Gas Prices & Annual Miles

Energy Impact Score

Annual Petroleum Consumption
(1 barrel=42 gallons)

7.4 barrels/year

Carbon Footprint

Annual Tons of CO₂ Emitted

4.0

Personalize Annual Miles

3.5 16.2

www.fueleconomy.gov

- [Find and Compare Cars](#)
- [Gas Mileage Tips](#)
- [Gasoline Prices](#)
- [Your MPG Will Vary](#)
- [Why is Fuel Economy Important?](#)
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- [Compare Side-by-Side](#)
- [Search by Class](#)
- [Search by Make](#)
- [Search by MPG](#)
- [Cars that don't need gasoline](#)
- [Best and Worst MPG](#)

[Use Your Gas Prices & Annual Miles](#)
[Switch to Metric units](#)


[MPG ratings for 1985-2007 models have been revised](#)

[Learn more about "Your MPG"](#)


2007 Honda Civic



2007 Honda Civic Hybrid



2007 Honda Civic CNG




Hybrid Vehicle

Possible Tax Incentives

Natural Gas Vehicle

Possible Tax Incentives

Compare side-by-side



Estimated New EPA MPG								
REGULAR GASOLINE			REGULAR GASOLINE			NATURAL GAS		
26 City	29 Combined	34 Hwy	40 City	42 Combined	45 Hwy	24 City	28 Combined	36 Hwy
Official EPA Window Sticker MPG								
30 City	33 Combined	38 Hwy	49 City	50 Combined	51 Hwy	28 City	32 Combined	39 Hwy
MPG Estimates from Drivers Like You								
Average based on 29 vehicles.			Average based on 50 vehicles.			Average based on 3 vehicles.		
Lo 23	32.0	Hi 39	Lo 30	42.7	Hi 57	Lo 31	34.5	Hi 38
View Individual Estimates			View Individual Estimates			View Individual Estimates		

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Address <http://www.fueleconomy.gov/feg/findacar.htm>

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Find a Car

Compare Side-by-Side

Search by Class

Search by Make

Search by MPG

Cars that don't need gasoline

Best and Worst MPG

Fuel Economics

Cost to drive 25 Miles	\$3.52	\$2.43	\$1.47
Fuel to Drive 25 Miles	0.86 gal	0.60 gal	0.89 gal
Cost of a Fill-up	\$48.47	\$45.17	-
Miles on a Tank	345 miles	465 miles	-
Tank Size	13.2 gal	12.3 gal	-
Annual Fuel Cost*	\$2111	\$1457	\$884

Based on 45% highway driving, 55% city driving, 15000 annual miles and Reg. Gas: \$4.08 per gallon
CNG: \$1.65 per gallon equivalent* You may personalize these values to reflect the price of fuel in your area and your own driving patterns.





Energy Impact Score

Annual Petroleum Consumption  (1 barrel=42 gallons)	 11.8 barrels	 8.2 barrels	 0.1 barrels
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Carbon Footprint

Annual Tons of CO ₂ Emitted 	 6.3	 4.4	 5.4
Personalize Annual Miles	3.5 16.2	3.5 16.2	3.5 16.2

EPA Air Pollution Score

Air Pollution Score 	 6	 9	 9
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- Show Scores for California and Northeast States
- Show Detailed Air Pollution Information

Fuel economy goes mobile at fueleconomy.gov/m

- New mobile site designed for access via PDA, cell phones, and other mobile devices
- Access fuel economy and related information at your convenience anywhere, anytime
- View
 - EPA mileage ratings for all cars and light trucks sold in the U.S. back to model year 1985
 - Annual fuel cost estimates
 - Annual petroleum use (barrels of domestic & imported petroleum)
 - Carbon footprint (tons of carbon dioxide emitted annually)



Coming Soon:

AFDC Station Locator Guide Goes Mobile !!



Potential Funding Categories for FY 09 Clean Cities Solicitation

1. Infrastructure for Alternative Fuels:

- intended to fund a percentage of the infrastructure cost associated with developing alternative fuel fueling capability.

2. Education/Outreach & Workshops:

- intended to provide technical support to help accelerate the transition to biofuels and other alternative fuels in the transportation sector. This may include the development of educational materials, direct technical assistance, and workshops on subjects such as, Vehicle/Fuel Benefits and Availability, Fuel Handling & Quality, First Responder Training, the Safe and Proper use of AFVs and refueling equipment/stations, working with local public safety and regulatory officials, etc.

3. Incremental Cost of Alternative Fuel Vehicles

- intended to fund a percentage of the incremental cost associated with purchase of dedicated alternative fuel vehicles.



Projected Schedule for FY 09 Clean Cities Program Solicitation

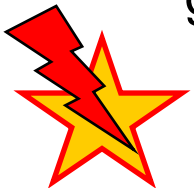
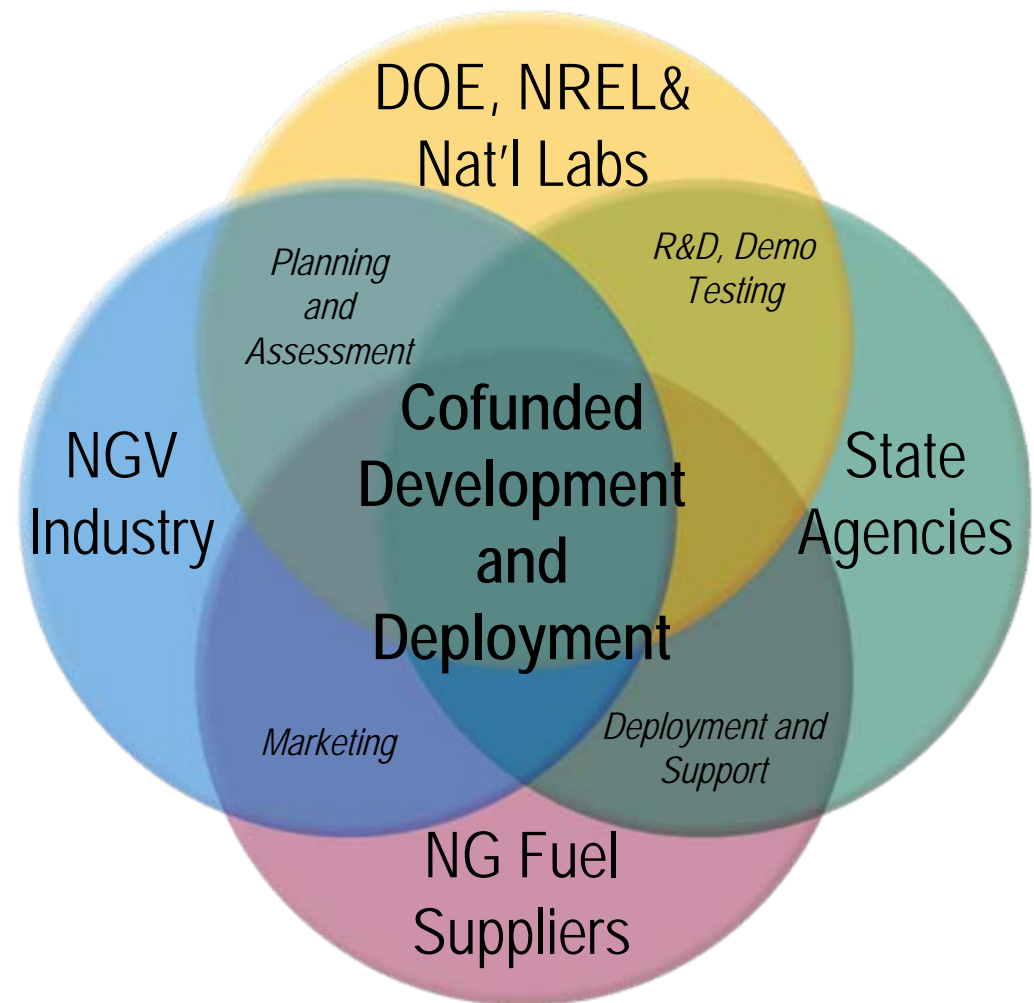
1. NETL will manage solicitation and awards
2. Estimated Date to Issue Solicitation: Nov/Dec 2008
3. Estimated Due Date For Proposals: Feb 2009
4. Estimated Award Announcement Date: Spring 2009
5. Estimated Funding Available:
 - \$6 million in DOE funds over 2 year funding period
(i.e. \$3 million in FY 09 funds & \$3 million in FY 10 funds).

**** Applications Must Be Submitted via Grants.gov**

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